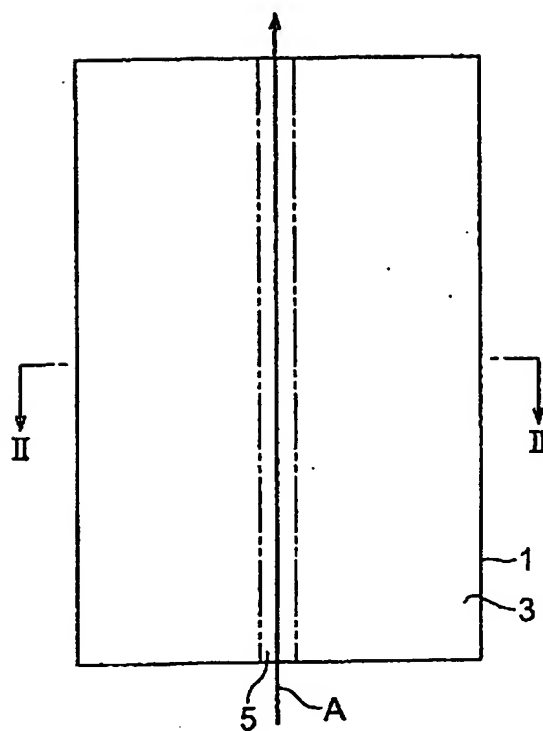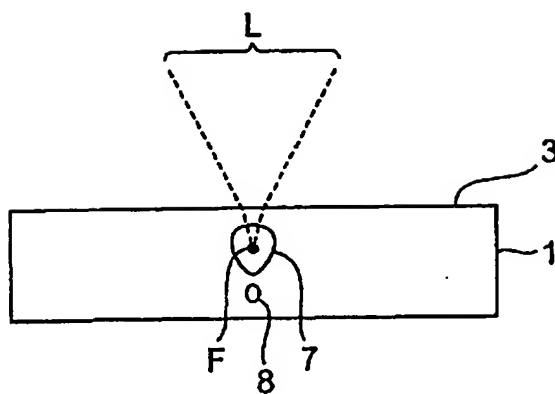FP04-0220-00
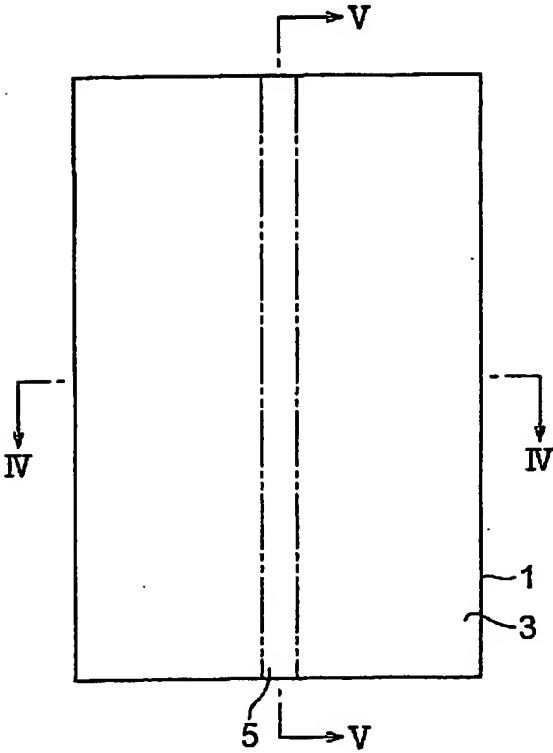
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Fig.1

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Fig.2

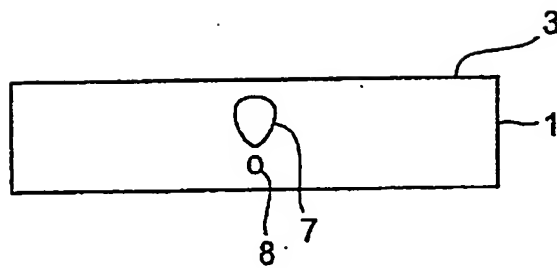FP04-0220-00

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Fig.3

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Fig.4

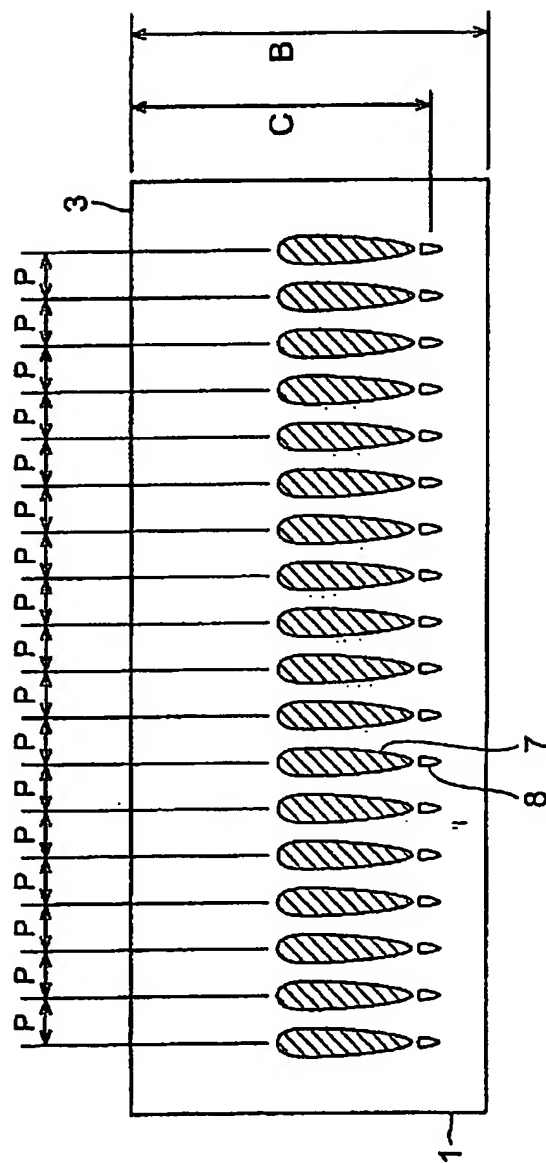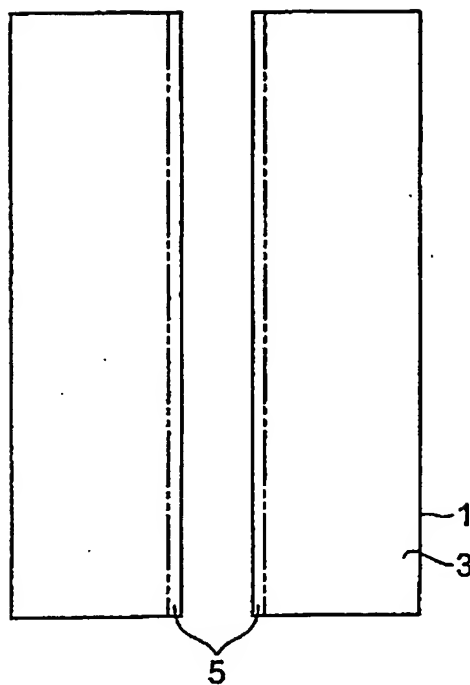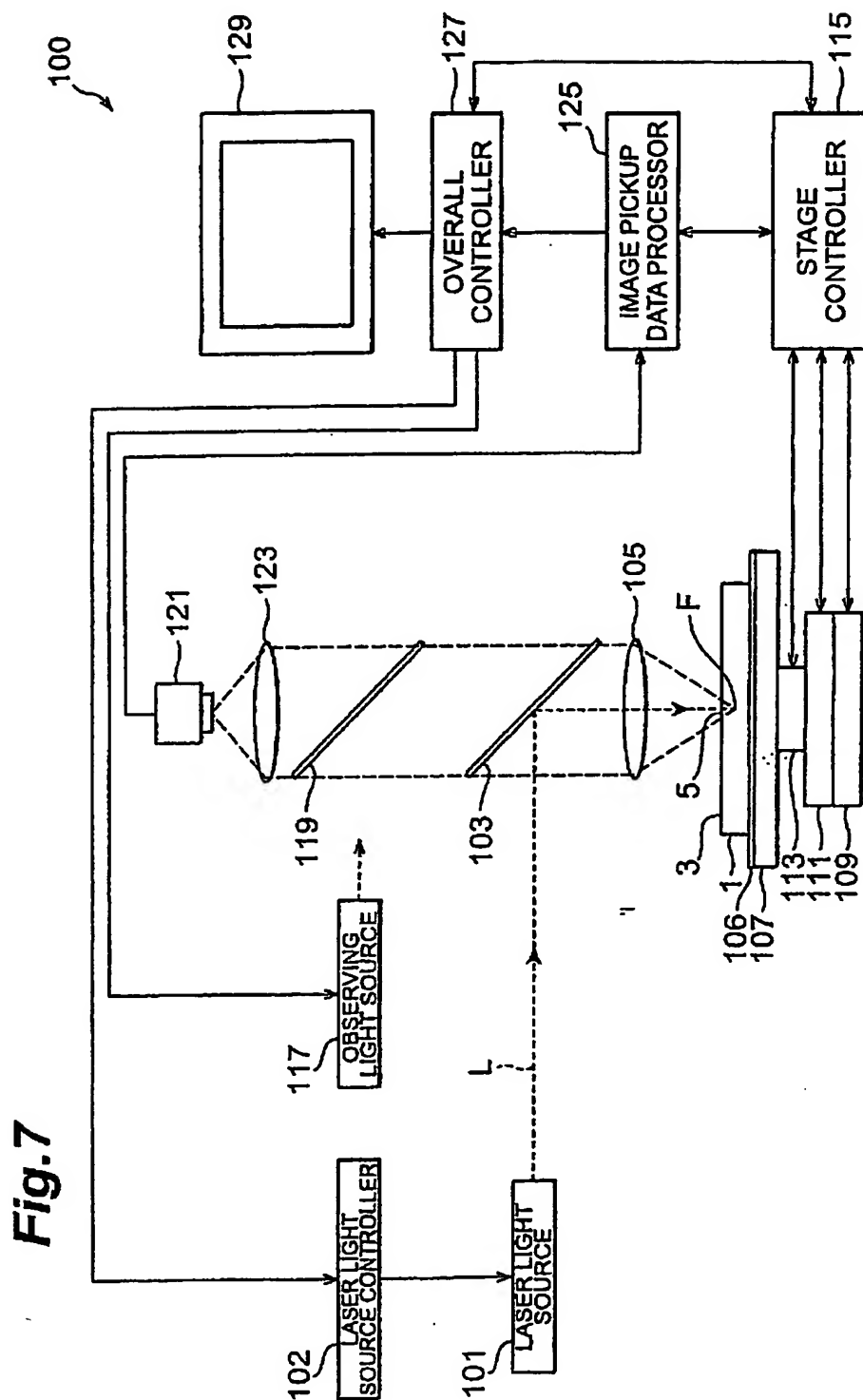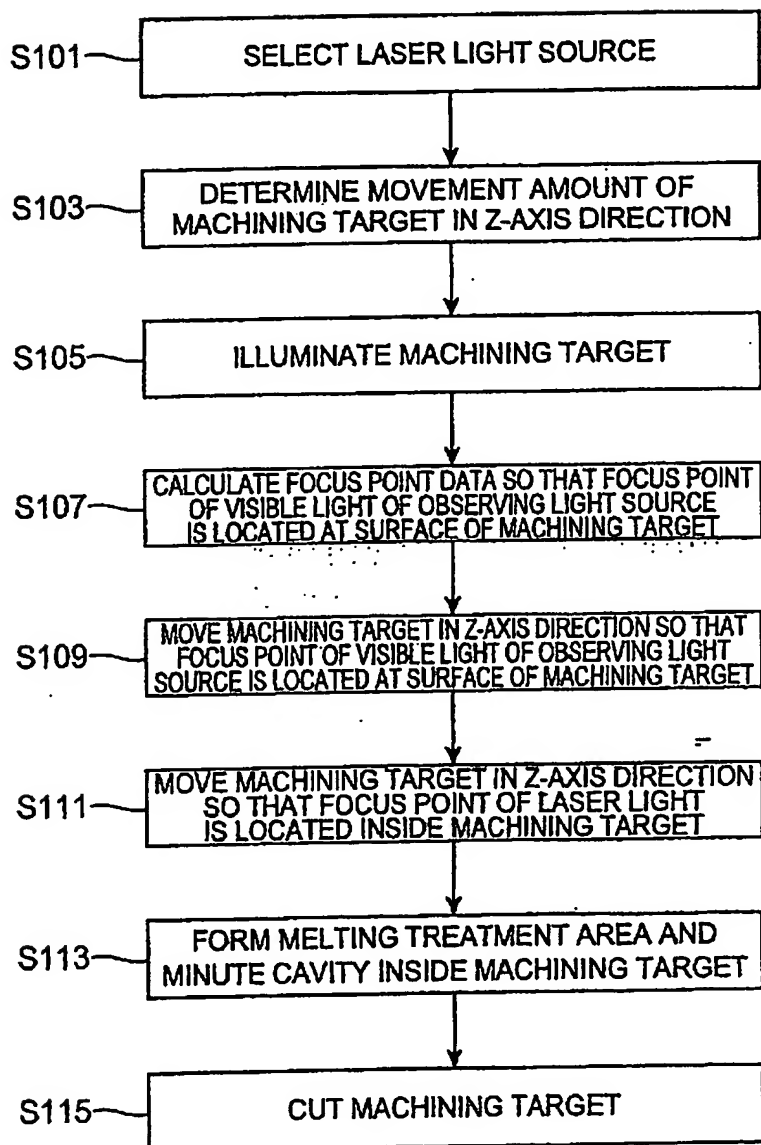FP04-0220-00

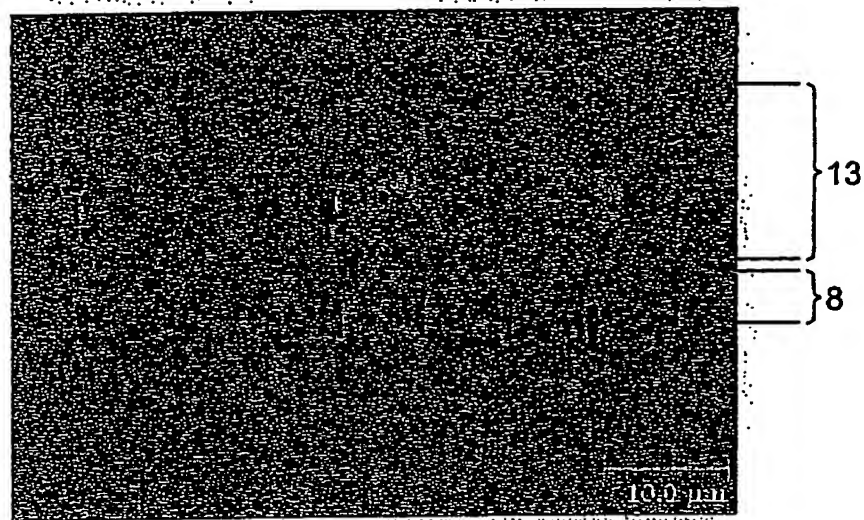5/20

Fig.5

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Fig.6

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Fig.7

100

129

127 OVERALL CONTROLLER

125 IMAGE PICKUP DATA PROCESSOR

115 STAGE CONTROLLER

121

123

105

F

5

3

106
107

113
111
109

119

103

117 OBSERVING LIGHT SOURCE

L

102 LASER LIGHT SOURCE CONTROLLER

101 LASER LIGHT SOURCE

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Fig.8

S101 —— SELECT LASER LIGHT SOURCE

↓

S103 —— DETERMINE MOVEMENT AMOUNT OF MACHINING TARGET IN Z-AXIS DIRECTION

↓

S105 —— ILLUMINATE MACHINING TARGET

↓

S107 —— CALCULATE FOCUS POINT DATA SO THAT FOCUS POINT OF VISIBLE LIGHT OF OBSERVING LIGHT SOURCE IS LOCATED AT SURFACE OF MACHINING TARGET

↓

S109 —— MOVE MACHINING TARGET IN Z-AXIS DIRECTION SO THAT FOCUS POINT OF VISIBLE LIGHT OF OBSERVING LIGHT SOURCE IS LOCATED AT SURFACE OF MACHINING TARGET

↓

S111 —— MOVE MACHINING TARGET IN Z-AXIS DIRECTION SO THAT FOCUS POINT OF LASER LIGHT IS LOCATED INSIDE MACHINING TARGET

↓

S113 —— FORM MELTING TREATMENT AREA AND MINUTE CAVITY INSIDE MACHINING TARGET

↓

S115 —— CUT MACHINING TARGET

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Fig.9

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Fig.10
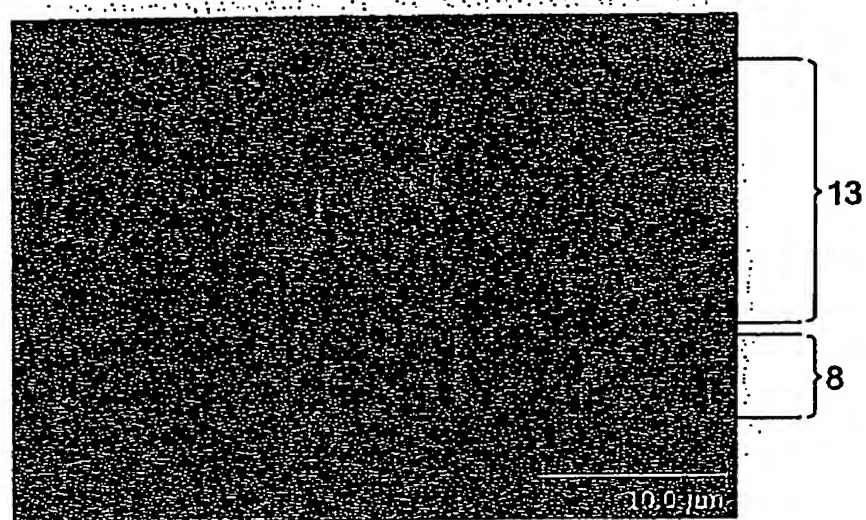
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Fig.11
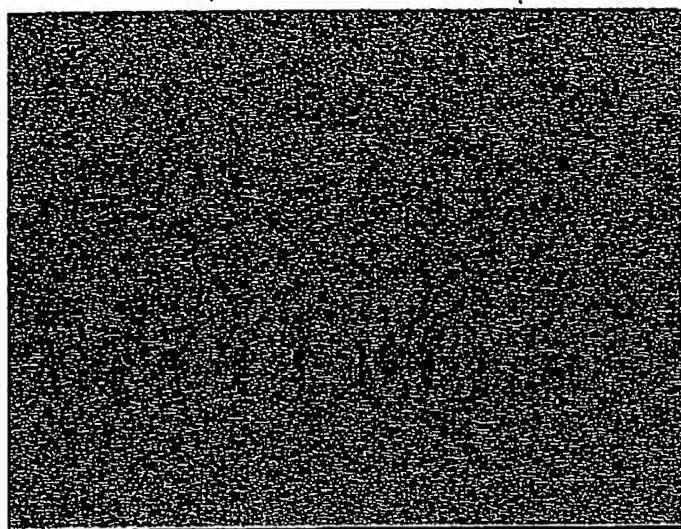
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Fig.12

PULSE PITCH (μm)	1.00	2.00	3.00	4.00	5.00	6.00	7.00
MACHINING DEPTH (mm/sec)	75	150	225	300	250	300	280
FREQUENCY (kHz)	75	75	75	75	50	50	40
PULSE WIDTH (nsec)	170	170	170	170	161	161	152
MACHINING DEPTH (μm) 45	HC MOUNTAIN,△	HC MOUNTAIN,△	HC MOUNTAIN,△	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O
50	HC MOUNTAIN,△	HC MOUNTAIN,△	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O
51	HC MOUNTAIN,△	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O
56	HC MOUNTAIN,△	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O
60	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	HC MOUNTAIN,O	ST △
68	ST △	HC MOUNTAIN,O	ST O	HC MOUNTAIN,O	ST △	ST △	ST △
69	ST △	ST O	ST O	ST O	ST O	ST O	ST △
79	ST △	ST VALLEY,O	ST VALLEY,O	ST O	ST O	ST O	ST △
81	ST O	ST VALLEY,O	ST VALLEY,O	ST O	ST O	ST O	ST △
82	ST O	ST VALLEY,O	ST VALLEY,O	ST O	ST O	ST O	ST O
88	ST O	ST VALLEY,O	ST VALLEY,O	ST O	ST VALLEY,O		ST △
90	ST O	ST VALLEY,O					

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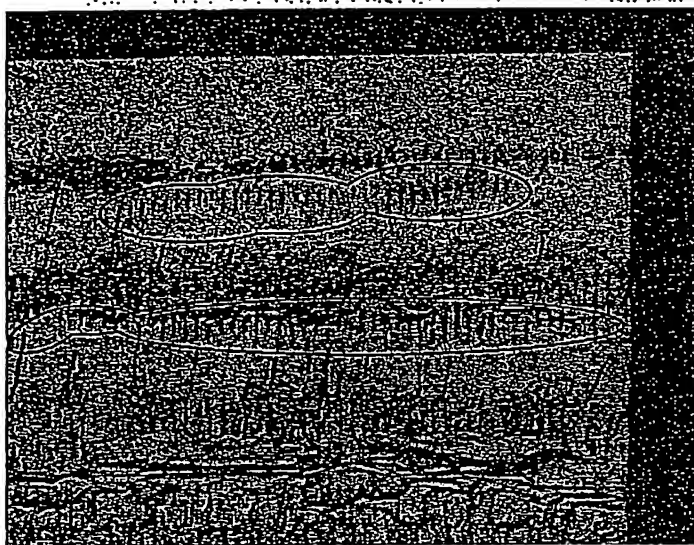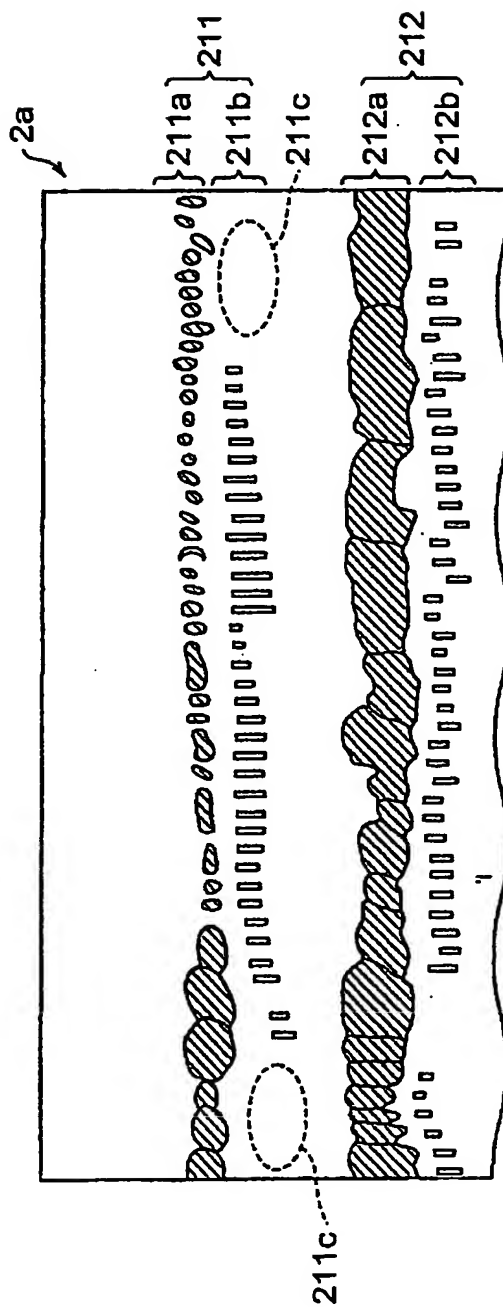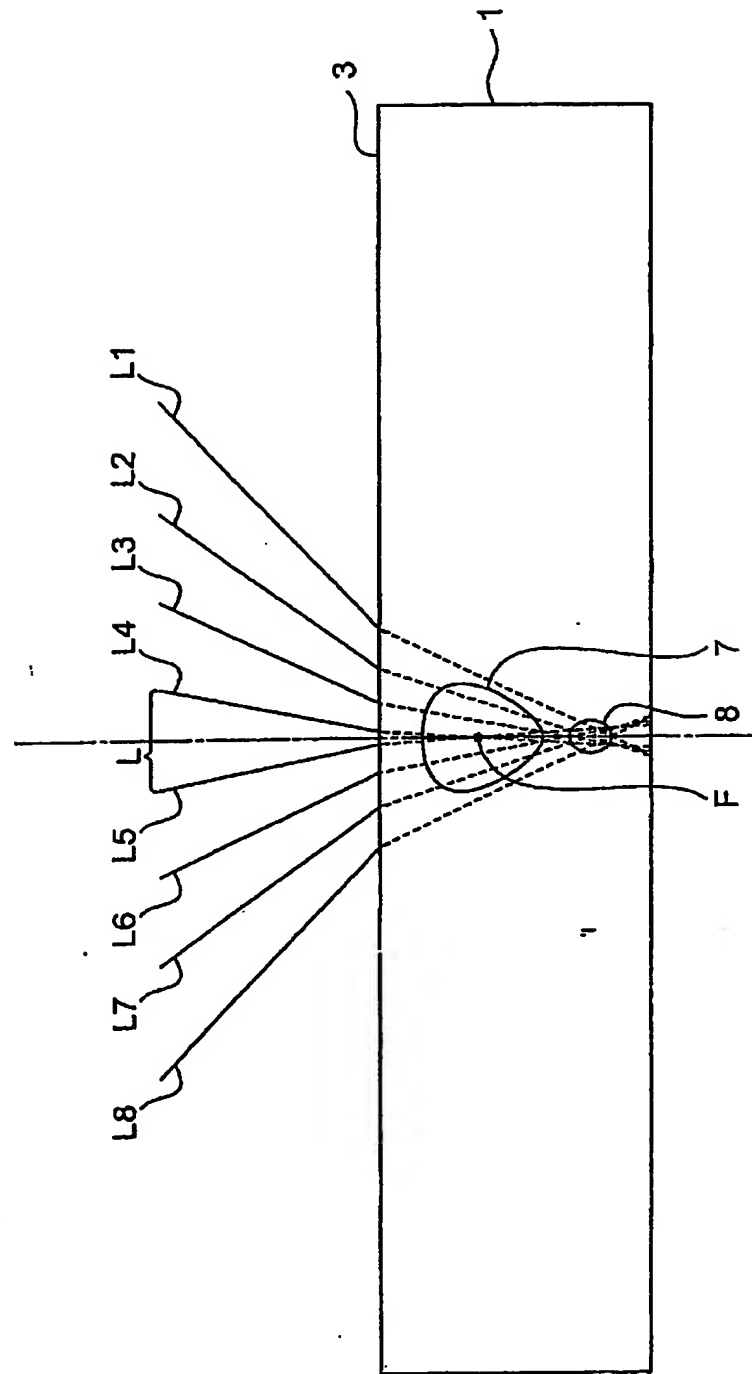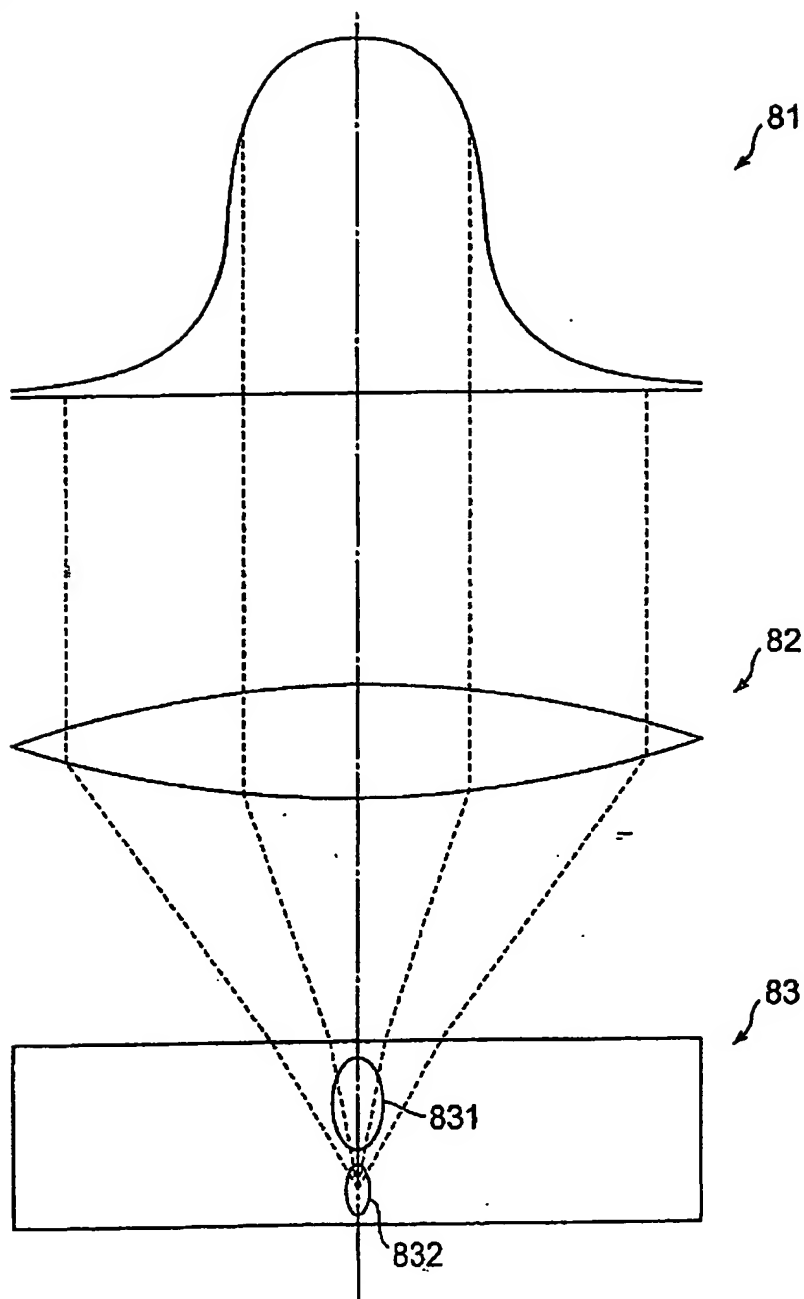*Fig.13*
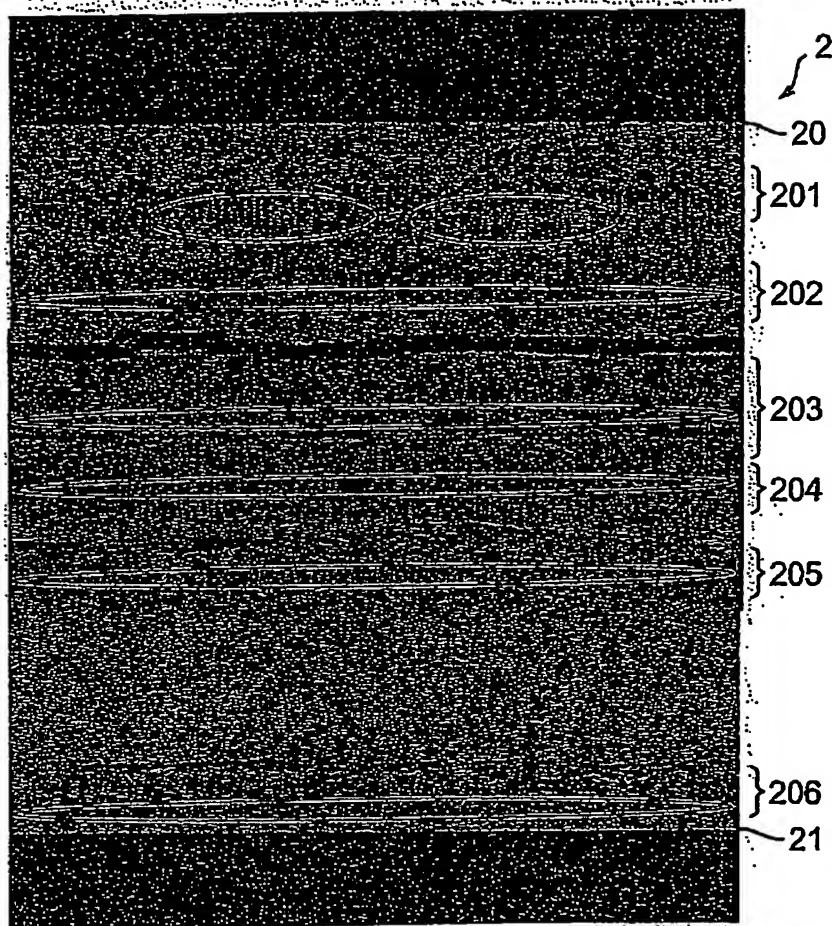
Fig.14

2a

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Fig.15
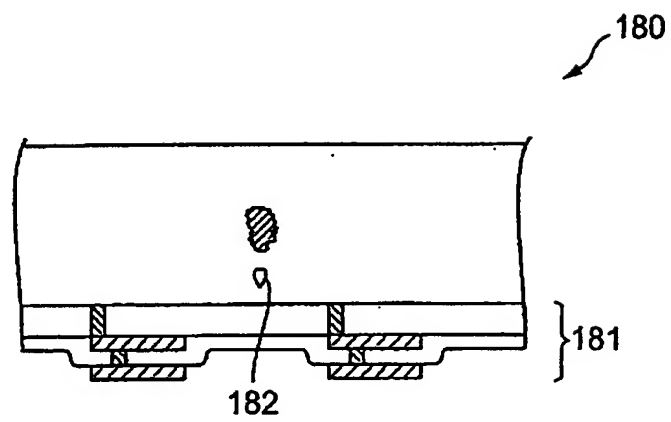
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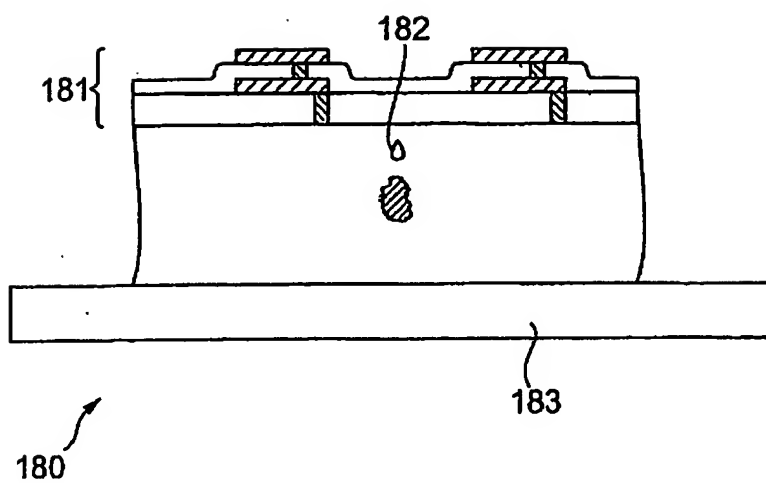## Fig.16

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Fig.17

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Fig.18

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Fig.19

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Fig.20